Notebook, N-90-03-14.1

This notebook covers the period March-November 1890. Most of the book contains routine ore analyses by John V. N. Dorr, Samuel Blan, and Charles W. Platt. Included are assays of a New Zealand ore submitted by Sir John Pender. There are also notes by Platt regarding experiment no. 353, tests of an electric traction motor. The front cover is labeled "#602." The pages are unnumbered, and the book has been used in both directions. Several pages have been removed from the book. Approximately 180 pages have been used.

Only the notes relating to experiment no. 353 have been filmed.

N-90-03-101.1

#602

John Dorr

~~Pin 90~~

Paul Blanc

June 17/90

Chas W Platt

Sept 1890

Pie 2

1033
87
1120

35
35
17
87

87
87
174

17
17
35
17
52
52
104
35
9

.2827) .1650 (.58
1413
2420
2261
159

Fe 56
2 112
OH 17
6 109
221

.2827
.2289
.6598

112 : 221 = 116 :
116
221
116
232
232
2560 (.2289
224
320
224
696
696
1000

no g. only!

353 © W Plate

Short-cam motor -

analogous of result on nine wire.
Cannot be exposing to fumes of HNO_3,
and then heating in oven -

weight of result taken -

.2827

wire + NO_3 7.7865
weight of wire 7.6209
.1656 $Fe(NO_3)_3$
.58% Fe_2O_3 .7
.11599 Fe

Standardizing of Sol. for Fe.

5 grms weight of KMnO4

wgt of Iron wire 1.0013

Reading on Burette 48 cc

23.3 Volume of KMnO4 71.9 cc

95.4

50

73.3

5) 1.0013
.20026
.996

120 156
180234
180234
.199589 6

23.3) 19.9959 6 (.85604
18 64
1305
1165
1408
1398
1090

100 cc Permanganate = .85604 pure iron

analysis

2nd Sample wrot.

wgt of wrot taken .2010

54.1
45
6.1

.85604
6.1
-85604
513624
5.218 44

.05 32
5
.2660

2 oz Standard

1 gal Ammonia

28.[illegible] — 71.4

28.8
1.6
.4
23.3

.996
.20
.19920

23.3) .19920 (85.49
1864
1280
1165
1150
932
2180

= 1 cc

100 cc Ammonia solution = .85.5 lbs.

85.49
61
85491
51294
5214890
5
2607445

$$Fe + 2HNO_3 = Fe(NO_3)_2 + H_2$$

$$2\,Fe(NO_3)_2 + 3\,H_2O = Fe_2(OH)_6 + 2NO_2 + N_2O_5$$

$$Fe_2(OH)_6 + \Delta = Fe_2O_3 + 3H_2O$$

also

$$2\,Fe(NO_3)_2 + \Delta = Fe_2O_3 + 2\,NO_2 + N_2O_5$$

Rusting of Iron -

When confined in box - and exposed to a direct current of HNO_3 fumes - action of 25 - 45 min - sufficient then heated - the coating of rust is known irregular - if the wire after exposure to HNO_3 fumes be washed the coating is too thin - if the wire be heated as it is taken from the box the oxide is of varying thickness -

Exposed to moist air for varying lengths of time and then heated gave good results -

Exposed to steam - results not good

Placed in salt solution - then washed rust was of uncertain thickness -

Placed in salt - heated without washing the rust was fairly good. -

SO_2 SO_4

Removal black oxide on iron by immersing for a few minutes in a bath of conc. sulphuric acid and dilute H_2SO_4 – oxide is easily removed by rubbing.

Reduction by H – C + CO – not sufficient

Black oxide of NiCl – not H_2O assumes myself –

Heaven 10 × 6 × 7 – upon gaseous consisted by fumes of HNO_3 placed in 2 dishes over flame –

50 lbs. heated – on sticks ~~[illegible]~~ 14 hrs by steam alone – then dried of Cover 1 [illegible] placed in hard. steam continued 5 hrs – Placed in ovens – at 100°F – heated to 250°F and slowly – Placed in heated oil + Benzine – oil thrown off by centrifugal – Heated to 212°F –